Elbow

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Introduction

- Examination of the elbow joint requires careful examination of the shoulder and neck as well as the wrist joint as pain can be referred to the elbow from both of these locations. The elbow joint is a synovial joint that allows flexion and extension. There are no intra-articular ligaments that stabilize the elbow joint and the majority of stability of the elbow joint arises from surrounding ligaments, muscles, joint capsule, and bony articulation. The elbow articulations are made up of the ulnohumeral and radiohumeral joint. The most common musculoskeletal condition that is encountered around the elbow is an overuse syndrome related to excessive wrist extension known as lateral epicondylosis.

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Physical Examination

- ***Inspection***
  - Should include the carrying angle of the arm, which is formed by the long axis of the humerus and ulna when the elbow is straight and forearm is supinated.
  - In adults, there is a slight valgus deviation of the carrying angle with a normal angle of 5–10° in males and 10–15° in females [1].
  - Medial epicondyle is the origin of the flexor muscle mass or the common flexor tendon.
  - Lateral epicondyle is the origin of the common extensor tendon.
  - Posterior elbow is the location of the olecranon bursa, which overlies the bony protuberance of the ulna and can become inflamed due to prolonged pressure or trauma.
- ***Palpation*** of the elbow may begin with the medial epicondyle, which is easily palpable and is the site of origin of the common flexor tendon. Just posterior to this is the ulnar groove in which Tinel's test can be performed to reproduce paresthesias along the distribution of the ulnar nerve. Posteriorly, the olecranon process is palpable as well as the distal insertion of the triceps tendon into the olecranon. Superficial to the lateral epicondyle is the muscles that compose the common

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extensor tendon and the anconeus muscle can be palpated between the olecranon and lateral epicondyle. A radial head fracture should be considered if a patient presents with a history of trauma and pain located along the radial head while pronating or supinating the forearm.

- Passive and active ***range of motion*** should be observed and compared side to side. Normal range of motion of the elbow is as follows: flexion (140–160°), extension (0–10°), pronation (80–90°), and supination (90°) [2].
- The following are ***special tests*** performed around the elbow with a particular focus on lateral epicondylosis which is more commonly encountered in the office setting.
  - Lateral Epicondylosis (Tennis Elbow)
    - Cozen's test, also known as the resisted wrist extension test, is performed by extending the wrist against resistance with the forearm pronated causing increased pain along the lateral epicondyle. The more extended the elbow while performing this test, the more likely wrist extension with resistance is to cause pain.
    - Mill's test is performed by the examiner palpating the patient's lateral epicondyle while passively pronating the forearm, flexing the wrist, and extending the elbow. The test is considered positive if there is reproduction of pain near the lateral epicondyle.
    - Maudsley's test, also known as the resisted middle finger extension test, is performed by the patient trying to extend the 3rd digit of the hand against resistance, stressing the extensor digitorum brevis muscle and tendon while palpating the patient's lateral epicondyle. The test is considered positive if there is reproduction of pain near the lateral epicondyle.
    - Chair lift test is performed and considered positive by having pain that is reproduced along the lateral epicondyle while lifting the back of a chair with the elbow fully extended.
  - Medial Epicondylosis (Golfer's Elbow)
    - There are few tests that can be performed for this condition but symptoms may be reproduced with resisted wrist flexion and pronation. This test is performed by flexing the elbow to 90° and with the forearm supinated; the patient makes a fist and flexes the wrist while the examiner attempts to extend the wrist. The test is considered positive if resisted wrist flexion causes pain along the medial epicondyle.
  - Elbow Instability
    - Varus stress testing stresses the lateral collateral ligament of the elbow. This test is performed by placing the arm in 20° of flexion and slight supination. The examiner places their hand over the medial aspect of the distal humerus while placing the other hand lateral to the distal forearm. Varus stress is applied to the forearm while counter force is applied to the humerus. Excess gapping of the lateral elbow joint compared to the contralateral side may signify injury to the ligament. Valgus testing stresses the medial collateral ligament and applies pressure to the medial joint line of the elbow.
  - Ulnar Neuropathy at the Elbow
    - Tinel's can be performed at the elbow by tapping the ulnar nerve within the ulnar groove that is formed by the olecranon process and medial epicondyle. A positive sign is indicated by tingling along the ulnar distribution of the forearm and hand.
    - Wartenberg's sign may be observed by placing the patient's hand resting on the table while the examiner passively spreads the fingers apart and then asks the patient to bring them together. A positive test would be the inability to squeeze the little finger to the remainder of the hand.
    - Froment's sign is observed by having the patient hold a piece of paper between their thumb and index finger. The examiner then tries to pull the paper out of the patient's hand. With a ulnar neuropathy, the patient will flex their thumb by using

their flexor pollicis longus muscle to compensate for their weak pinch grip due to weakness of the adductor pollicis muscle, which is innervated by the ulnar nerve.

Question

1. Lateral epicondylosis occurs secondary to what type of repetitive motion causing tendinosis of which tendon? Repeated wrist extension causing tendinosis of the extensor carpi radialis brevis (ECRB) tendon.

References

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Suggested Reading

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